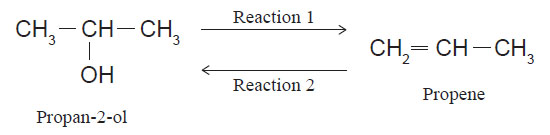
**Mostly one step organic reactions**

**1.**



In Reaction 1, propan-2-ol can be converted to propene.

In Reaction 2, propene can be converted back to propan-2-ol.

Analyse BOTH of these reactions by:

• describing the reagents and conditions needed for each reaction to occur

• identifying each type of reaction and explaining your choice

**2.** Ethene, C2H4(*g*), reacts with aqueous potassium permanganate solution, KMnO4(*aq*), dilute acid, H2O / H+,

and hydrogen bromide, HBr.

Compare and contrast the reactions of ethene gas with each of these three reagents.

In your answer, you should:

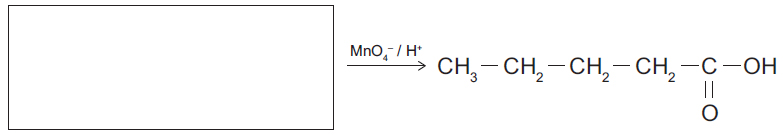
• describe any observations that can be made

• identify, with reasons, the type of reaction ethene undergoes with each reagent

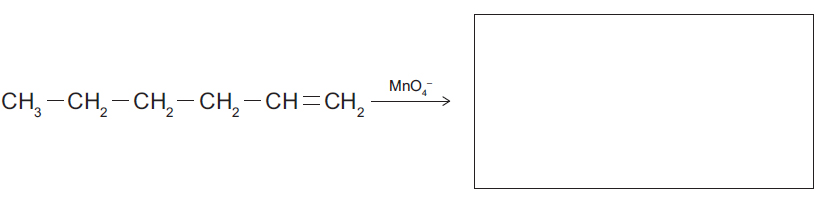
• describe the functional group of the products formed

• include equations showing the structural formulae for the organic compounds for each reaction.

**3. i)** When primary alcohols are oxidised by acidified permanganate, MnO4– / H+, they form carboxylic acids. Draw the primary alcohol that was oxidised to form the carboxylic acid shown.



ii) Permanganate ion, MnO4–, can be used to oxidise alkenes. Draw the product of the following reaction:



**4.**  Butan-1-ol can be oxidised to form a carboxylic acid.

i) Write the name or formula of a suitable reagent that could be used to carry out the reaction. Include

any specific conditions.

ii) Describe the colour change that would be observed.

iii) One of the other alcohol isomers of C4H10O can also be oxidised to form a carboxylic acid. Identify

this isomer by name or structural formula: Explain your choice of isomer.

**5.**  Give the **structural formula** of the organic product formed when:

i) Ethanol, C2H5OH, reacts with acidified potassium dichromate solution.

ii) Ethanoic acid, CH3COOH, reacts with sodium carbonate solution.

iii) One of the isomers of C4H8 can be oxidised with potassium permanganate, KMnO4, to form

2-methylpropan-1,2-diol. Complete the following equation to show the **structural formula** of the isomer

of C4H8



iv) 2-methyl propan-1,2-diol can be further oxidised with acidified potassium dichromate, Cr2O72– / H+, to

form a compound with molecular formula C4H8O3. The compound C4H8O3 reacts with sodium carbonate

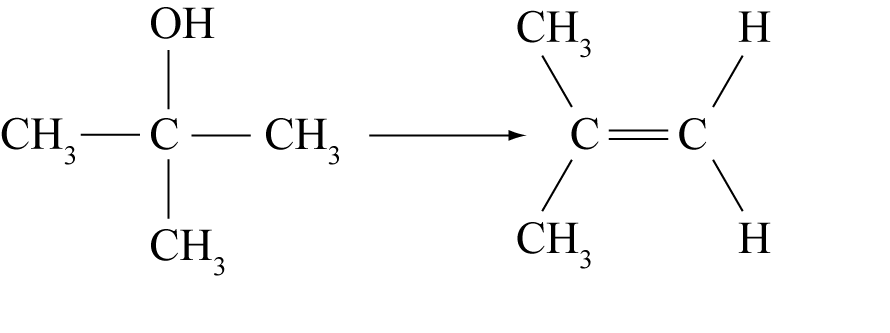
solution to form bubbles of carbon dioxide gas.

Draw the **structural formula** of the compound C4H8O3 below.

**6.**  Complete the following reactions by writing the structural formula of each organic product.

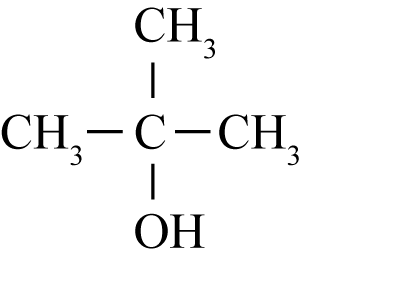
|  |  |
| --- | --- |
| a) | 90309q2a |
| b) | 90309q2b |
| c) | 90309q2c |

**7.**  Methylpropene can be formed from methylpropan–2–ol. Identify a reagent that can be used to do this.

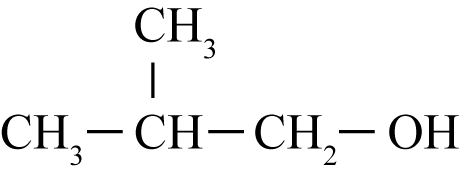


**8 a)** Complete the following equations by drawing the structural formula of the organic products

conc. H2SO4 and heat

i)  🡪

Cr2O72– /H+ and heat

(ii)  🡪

Reaction (ii)above can also be carried out using one of the reagents shown below.

**H2 / Pt conc. H2SO4 MnO4– / H+**

(b) Circle the correct reagent and describe what would be observed when this reaction occurs.

© 2016 <http://www.chemicalminds.wikispaces.com>

NCEA questions and answers reproduced with permission from NZQA